



A Citizen's Guide to Cleanup Methods

The Citizen's Guide Series

EPA uses many methods to clean up pollution at Superfund sites. If you live, work, or go to school near a Superfund site, you may want to learn more about cleanup methods. The Citizen's Guide series is a set of 21 fact sheets that describe, in general terms, cleanup methods used at Superfund and other sites. Each fact sheet is two pages long and answers five questions about the cleanup method: 1) What is it? 2) How does it work? 3) Is it safe? 4) How long will it take? and 5) Why use it? The guides, which are listed on page 3 of this brochure, are available in both English and Spanish.

What are cleanup methods?

Pollution comes from many different sources. Chemical spills, leaking landfills, and improper disposal of wastes can all leave harmful chemicals in soil, groundwater, lakes, and streams. Left in place, these chemicals may pose a threat to the health of people, animals, and plants. The chemicals also may spread from polluted areas to clean areas. Cleanup methods are ways to treat or contain pollution so that it does not threaten human health or the environment.

How do they work?

Typically, cleanup methods remove the harmful chemicals from polluted soil or water. Soil excavation is a common method that removes harmful chemicals from the environment. The harmful chemicals can then be disposed of properly in a landfill. Other methods that *treat* pollution, such as bioremediation and permeable reactive barriers, change the harmful chemicals into less harmful ones. Many cleanup methods that change or destroy harmful chemicals are considered *innovative*. Innovative cleanup methods are newer methods that have not been used very often or under a wide range of conditions.

Several cleanup methods can treat pollution *in situ*, or in place, without digging up the soil or pumping groundwater from beneath the ground. In general, these methods can be faster and less costly when treating pollution beneath the ground.

Cleanup methods that *contain* pollution prevent chemicals from moving from polluted sites to clean areas. An example of a method that contains the pollution is capping.

Are cleanup methods safe?

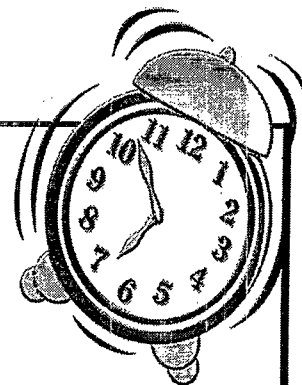
Before a cleanup method is used, EPA studies the site and generally tests the method to confirm it can work. During cleanup, EPA also tests the soil, groundwater, and air to make sure the method is working. EPA makes sure that people can't come into contact with the pollution during cleanup. Testing also ensures that pollution is not spreading, such as being released to the air.

How long will it take ?

Cleanup methods can take weeks or many years to clean up a site. The length of time depends on several factors that vary from site to site:

- size, depth, and conditions of the polluted area (Is soil or water polluted?)
- type and amounts of harmful chemicals present
- selected cleanup method

EPA considers the length of time a cleanup may take when selecting a cleanup method. However, the cost and effectiveness of the method also are important.



Why use an innovative cleanup method?

For many years, polluted sites were cleaned up by digging up polluted soil and disposing of it in landfills. Polluted groundwater was pumped to the surface for cleanup in a method called "pump and treat." Trucking materials to landfills can be very expensive, and does not destroy the harmful chemicals. Pump and treat can take decades to complete and is also expensive.

In 1986, changes to EPA's Superfund law shifted preference from removal methods to treatment methods for polluted materials. This encouraged the development of innovative cleanup methods. Innovative cleanup methods are often faster and cheaper than conventional ones. Also, many can work under conditions where conventional methods fail. By 1994, six out of ten cleanup methods used at Superfund sites were innovative.

For more information

write the Technology
Innovation Office at:

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Washington, DC 20460

or call them at
(703) 603-9910.

Further information also
can be obtained at
www.cluin.org or
[www.epa.gov/
superfund/sites](http://www.epa.gov/superfund/sites).

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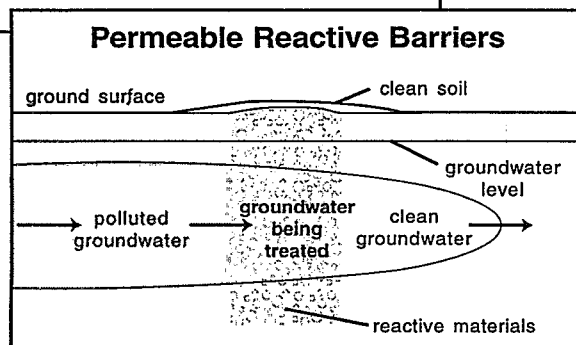
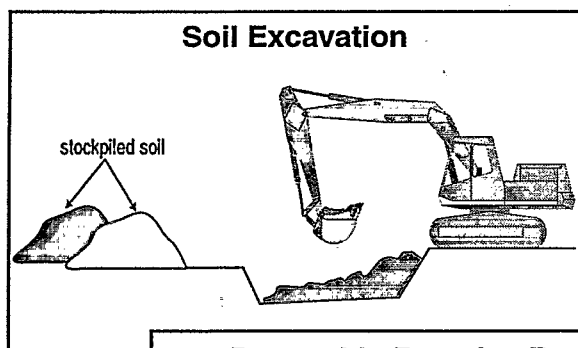
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